

# EMISSION TEST REPORT

Test report file No. : **02-IST-025/FB** Date of issue : Feb. 20, 2001

Model / Type No. : L700C  Basic  Alternate

Kind of product : LCD Monitor

Brand name : Daewoo

Applicant : Daewoo Electronics Co., Ltd. Display Business Division

Manufacturer : Daewoo Electronics Co., Ltd. Display Business Division

License holder : Daewoo Electronics Co., Ltd. Display Business Division

Address : 543, Dangjung-Dong, Kunpo-City, Kyonggi-Do, Korea

**Test result** according to the regulation(s)

Positive  Negative

at page 3.

This test report with appendix consists of 16 pages.

The test result only responds to the tested sample.

It is not allowed to copy this report even partly without the allowance of the Test Laboratory.

This equipment is complied with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-1992.

## DIRECTORY

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### B) Test Data.

Conducted emissions (Mains)	: 450 kHz - 30 MHz	<u>11 ~ 13</u>
Radiated emissions	: 30 MHz – 1 GHz	<u>14 ~ 15</u>

### C) Appendix

## **TEST REGULATIONS**

The tests were performed according to the following regulations ;

- - FCC Part 15, Subpart B (Unintentional Radiators, Class B)

## **Information of Test Laboratory**

### **IST EMC Lab.**

San 21-8 Goan-Ri, Baekam-Myun, Yongin-Si, Kyunggi-Do, Korea

International - Tel : 82-31 - 333 - 4093. Fax : 82-31 - 333 - 4094.

Domestic - Tel : 031 - 333 - 4093. Fax : 031 - 333 - 4094.

## EQUIPMENT UNDER TEST

### Equipment Description :

LCD Panel :	17.0 inch TFT LCD Pixel Pinch 0.264 x 0.264 mm
Frequency Range :	Vertical 56 ~ 77 Hz, Horizontal 30 ~ 80 kHz
PC Input Signal :	H / V separated (TTL) 15 pin mini D-Sub (Analog RGB)
Power Supply Input :	100 ~ 240 Vac, 50/60 Hz
Power consumption :	40 W (Max)
Micom Type :	MTV312MV64U (MYSON) – clock 12 MHz
Dimensions (W x H x D) :	420 x 398 x 194 mm (with stand)

### EUT Type :

- Table-Top.
- Floor-Standing.
- Table-Top and Floor-Standing(Combination).

### Operation – mode of the E.U.T. :

The equipment under test was operated during the measurement under following conditions :

- Standby.
- Operational Condition : Scrolling “H” characters under MS Windows 98,  
Test mode : 1280 X 1024, 75 Hz

### Configuration of the equipment under test :

Following peripheral devices and interface cables were connected during the measurement :

Equipment	Type	Brand	Serial No.
PC	Brio BA600/550	HP	SG01902402
Keyboard	SK-2502C	HP	M0004102821
Mouse1	M-S48A	HP	LZE01251424
Printer	A0302384	Northern Telecom	26633S60168
Mouse2	M-MD14-2	Logitech	N/A

#### Connecting Interface Cables :

- Unshielded AC power cable : 1.8 m
- Shielded monitor’s signal cable : 1.5 m
- Shielded printer’s signal cable : 1.5 m

## TEST CONDITIONS

The **measurement of the conducted emissions (Interference voltage)** was performed in a shielded room.

**Test location :**

- Shielded room. No.1                       Compact chamber 2

**Used testing instruments :**

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESH 3	Test Receiver	Rohde & Schwarz	Jun. 16, 2001	861742/015
3725/2	LISN	EMCO	Jul. 30, 2001	9101-2068
KNW-407	LISN	Hyup-Rip	Jul. 26, 2001	8-883-10
ESH 3-Z2	Pulse Limiter	Rohde & Schwarz	Jul. 13, 2001	357.8810.52

**Test - accessories :**

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

**Measurement Procedures :**

Conducted emissions measurements were made in accordance with ANSI C-63.4-1992, "Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The measurement were performed over the frequency range of 0.45MHz to 30MHz using a 50Ω/50uH LISN as the input transducer to an EMI/Field Intensity Meter. The measurements were made with the detector set for "Peak" amplitude within an IF bandwidth of 10kHz or for "quasi-peak" within a bandwidth of 9kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

**Test engineer :**



\_\_\_\_\_  
S. J. Oh / Research Engineer  
IST EMC Lab.

The **measurement of the radiated emissions (Electric field)** in the frequency range from 30 MHz to 1GHz was performed in horizontal and vertical antenna polarization at a open-site which meet the site attenuation requirement of ANSI C63.4-1992 and a test distance of :

Location :             Open Site No. 1       Open Site No. 2       Open Site No. 3  
 Distance :            3 meters             10 meters

**Used testing instruments :**

Name	Type	Manufacturer	Calibration. Date	Serial Number
ESVP	Test Receiver	Rohde & Schwarz	Jun. 12, 2001	861744/018
VULB 9160	Antenna	Schwarzbeck	Jun. 04, 2001	3048

**Test - accessories :**

Type	Manufacturer
Aneroid Barometer	Sato
Hygrometer	Sato

**Measurement procedures**

Radiated measurements were in accordance with ANSI C63.4-1992 “Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz”. The measurements were performed over the frequency range of 30MHz to 1GHz using antenna as the input transducer to a EMI/Field Intensity Meter. The measurements were made with the detector set for “quasi-peak” within a bandwidth of 120kHz.

All used test-instruments as well as the test-accessories are calibrated regularly.

**Test engineer :**



S. J. Oh / Research Engineer  
IST EMC Lab.

## TEST RESULT

### Conducted emissions : 450 kHz - 30 MHz

The requirements are.

KEPT                       NOT KEPT

Min. limit margin

\_\_\_\_\_ 11.3 \_\_\_\_\_ dB      at \_\_\_\_\_ 23.652 \_\_\_\_\_ MHz

Remarks : See test-graph to be attached at pages 11 ~ 13.

### Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are.

KEPT                       NOT KEPT

Min. limit margin

\_\_\_\_\_ 6.4 \_\_\_\_\_ dB      at \_\_\_\_\_ 403.8 \_\_\_\_\_ MHz

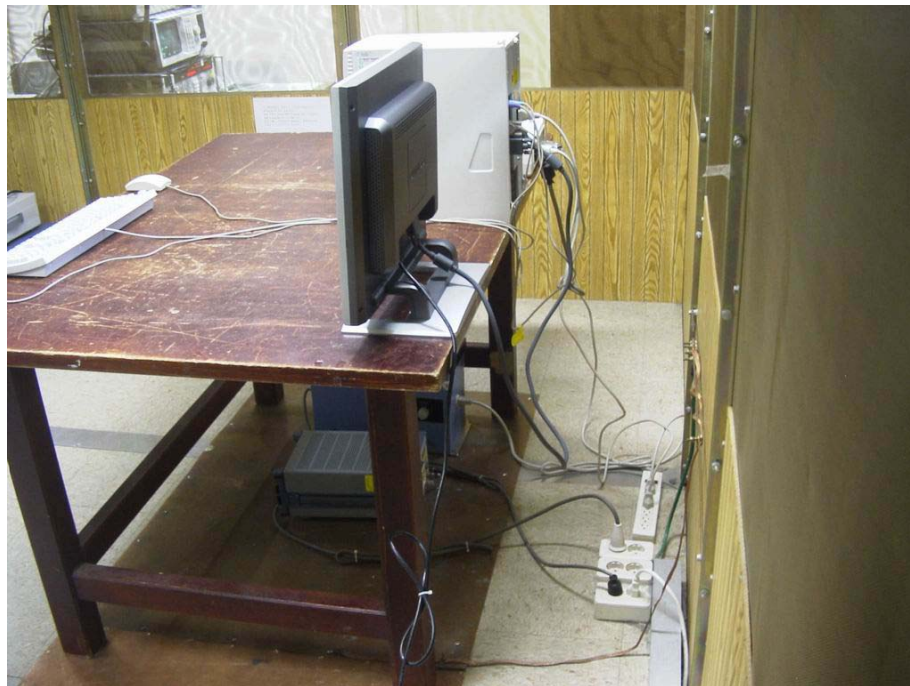
Remarks : See test-data at page 14 ~ 15.

## **TEST SETUP (Photos)**

Type : L700C



Conducted Emissions 0.15 MHz - 30 MHz



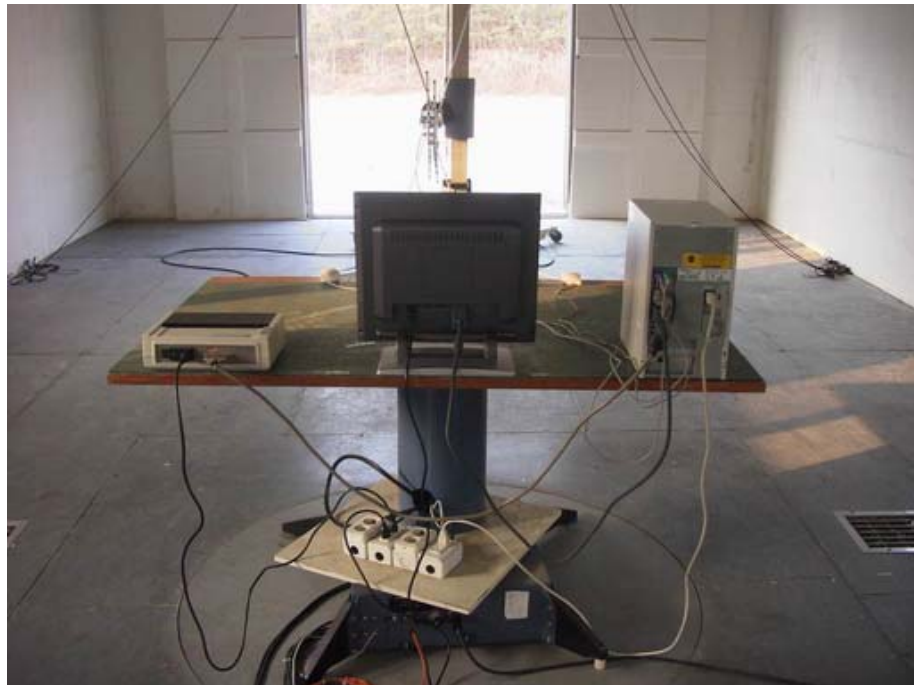


## **TEST SETUP (Photos)**

Type : L700C

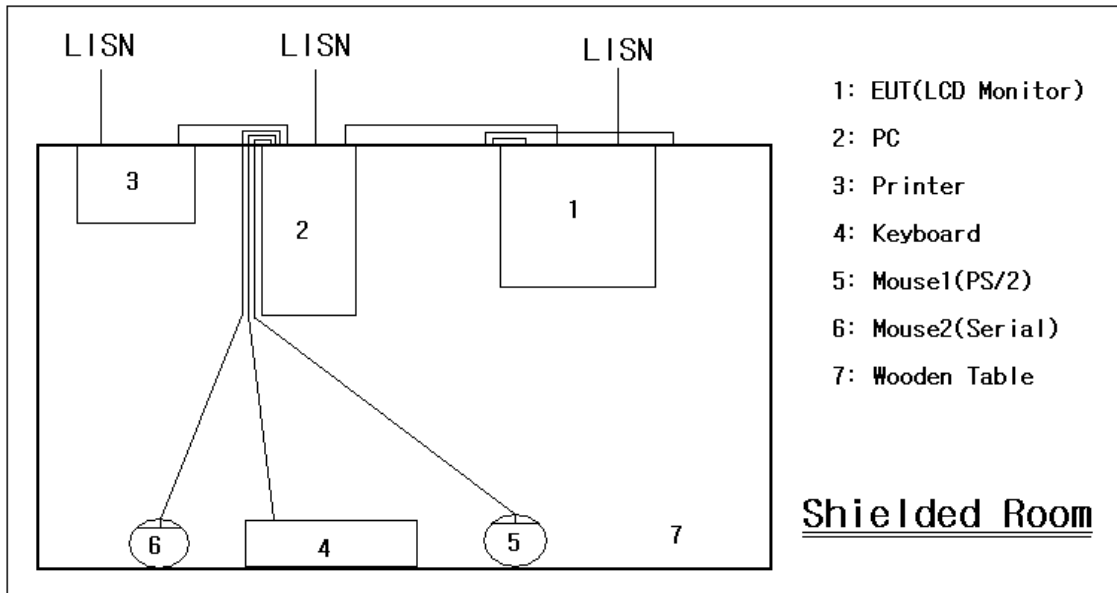


Radiated Emissions 30 MHz - 1000 MHz

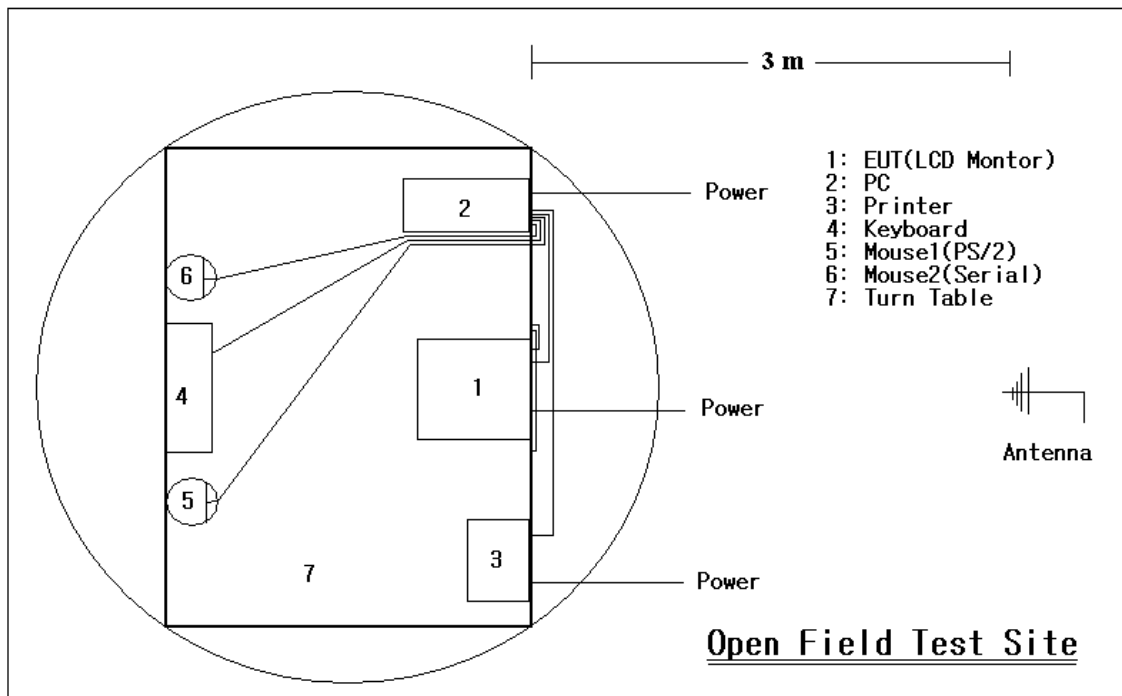


## TEST SETUP (Drawings)

Type : L700C



Conducted Emissions 0.15 MHz - 30 MHz



Radiated Emissions 30 MHz - 1000 MHz

## Conducted Emission Test Data

Type L520B  
 Manufacturer Daewoo Electronics Co., Ltd. Display Business Division  
 Operation mode Scrolling "H" pattern display 1280 x 1024, 75Hz  
 Environmental Condition Temperature : 19 °C  
 Humidity : 40 %  
 Atmospheric pressure : 1000 mbar  
 Date Feb. 14, 2002

### Highest Emissions relative to the limit

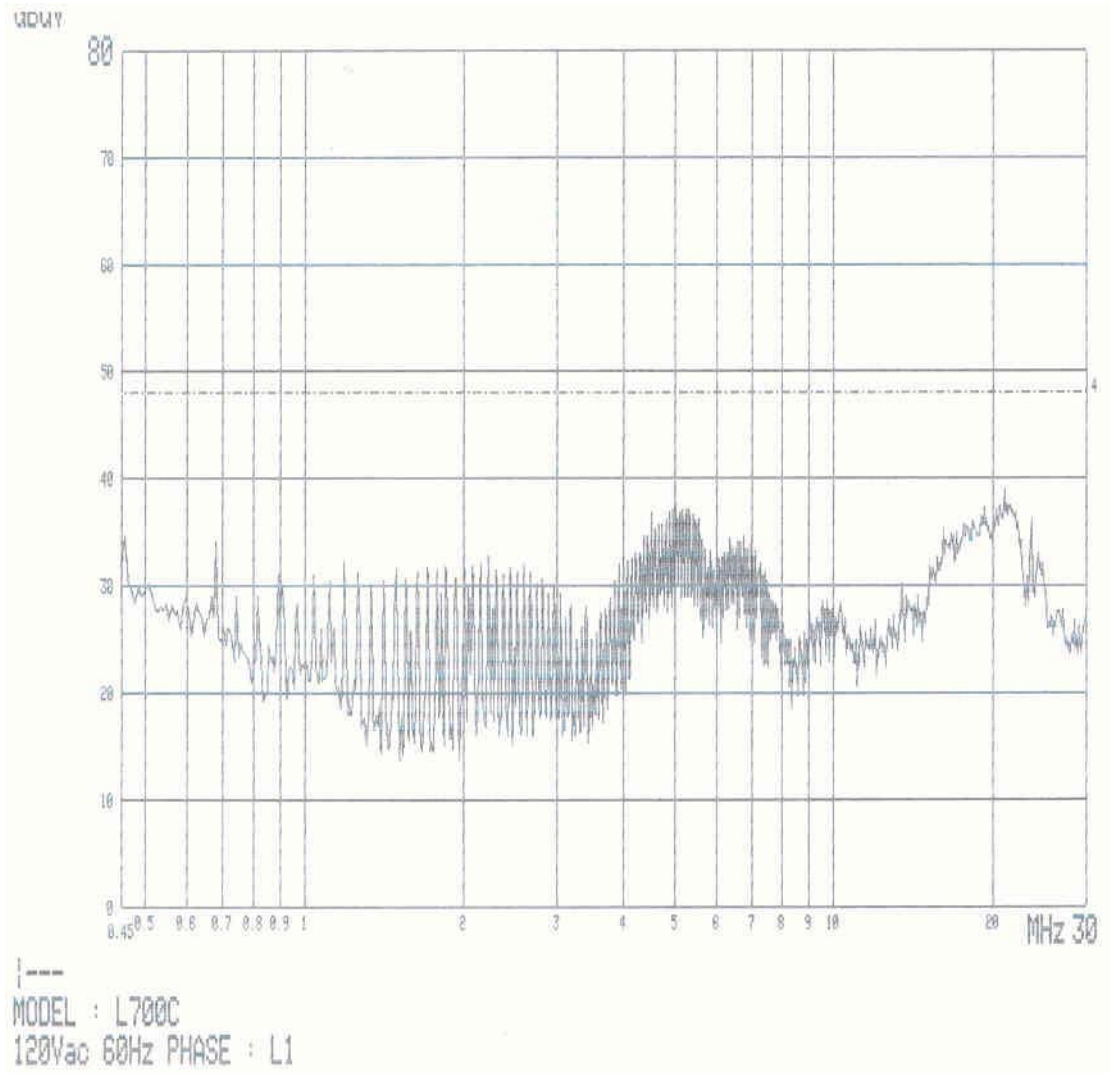
Frequency [MHz]	Reading [dB $\mu$ V]	Insertion loss [dB]	Phase (L1/N)	Result [dB $\mu$ V]	Limit [dB $\mu$ V]	Margin [dB]
0.460	31.6	0.8	L1	32.4	48.0	15.6
5.221	35.1	0.8		35.9	48.0	12.1
5.367	35.4	0.8		36.2	48.0	11.8
17.407	34.4	0.8		35.2	48.0	12.8
20.646	33.7	0.8		34.5	48.0	13.5
21.007	33.6	0.8		34.4	48.0	13.6
1.255	31.8	0.8	N	32.6	48.0	15.4
5.092	34.5	0.8		35.3	48.0	12.7
5.312	34.7	0.8		35.5	48.0	12.5
19.098	32.1	0.8		32.9	48.0	15.1
21.520	34.0	0.8		34.8	48.0	13.2
23.652	35.9	0.8		36.7	48.0	11.3

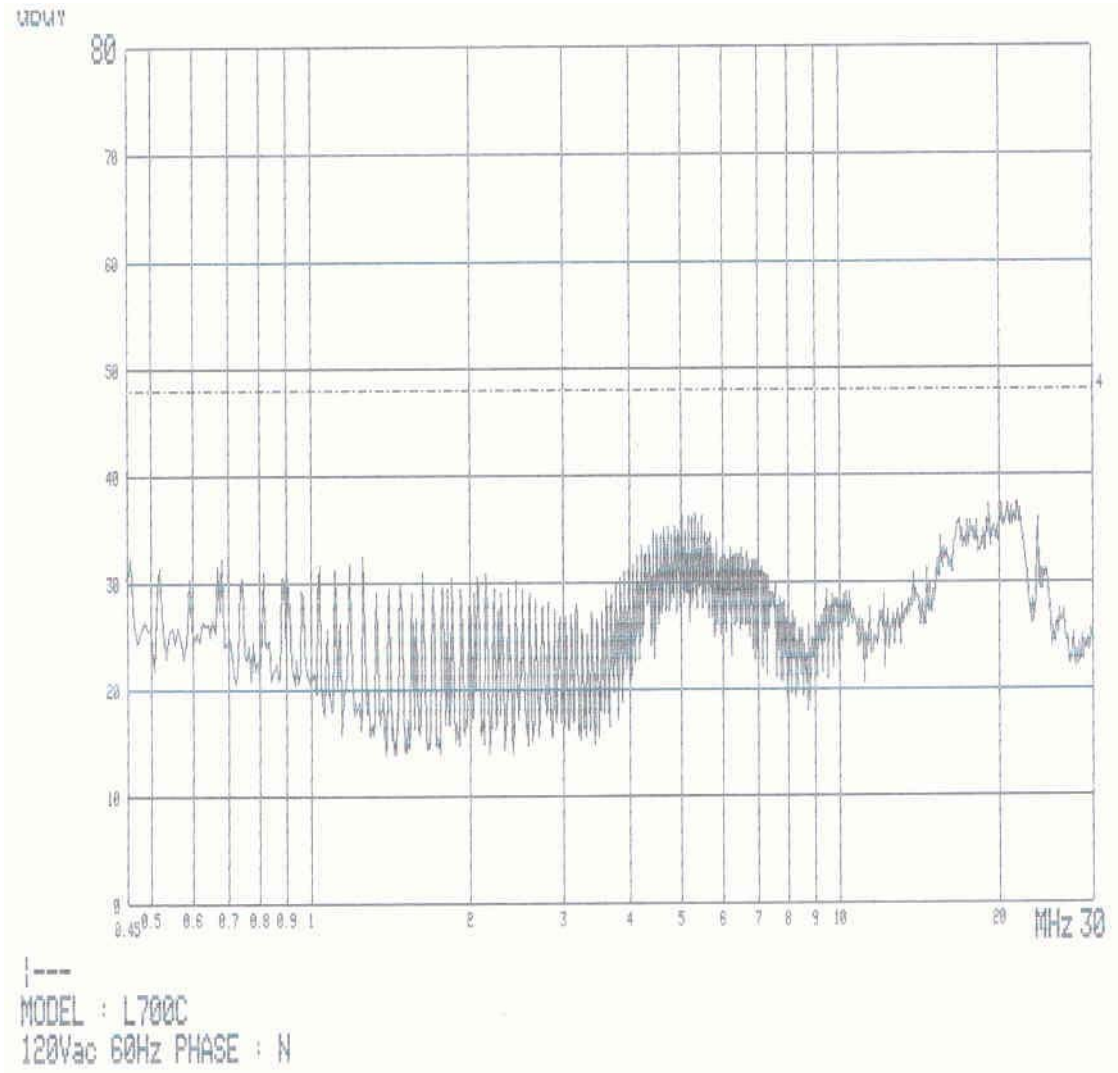
**Cable loss are less than 0.1 dB**

\*L1 : Live Line

\*\*N : Neutral Line

\*\*\* Please refer to data graphs at page 11 ~ 12





## Radiation Test Data

Type L520B  
 Manufacturer Daewoo Electronics Co., Ltd. Display Business Division  
 Operation mode Scrolling "H" pattern display 1280 x 1024, 75Hz  
 Environmental Condition Temperature : 17 °C  
 Humidity : 40 %  
 Atmospheric pressure : 1000 mbar  
 Test distance 3 m  
 Antenna VULB9160  
 Date Feb. 15, 2002

Freq. [MHz]	Reading [dBuV]	Antenna Factor [dB]	Cable Loss [dB]	Angle [deg]	Height [cm]	Polar [H/V]	Result [dBuV]	Limit [dBuV]	Margin [dB]
40.4	14.0	13.6	1.2	156	100	V	28.8	40.0	11.2
134.6	21.0	10.9	2.1	167	100	V	34.0	43.5	9.5
175.0	19.7	11.5	2.4	79	100	V	33.6	43.5	9.9
201.9	20.5	8.5	2.5	89	100	V	31.5	43.5	12.0
242.3	19.0	10.3	2.9	290	100	V	32.2	46.0	13.8
269.2	24.3	11.5	3.0	202	100	V	38.8	46.0	7.2
295.8	23.4	11.7	3.2	206	235	V	38.3	46.0	7.7
300.7	20.9	11.7	3.3	25	100	H	35.9	46.0	10.1
336.6	22.8	11.7	3.5	24	100	V	38.0	46.0	8.0
363.4	21.5	12.1	3.7	244	172	V	37.3	46.0	8.7
403.8	22.0	13.3	4.3	139	100	V	39.6	46.0	6.4
430.7	15.2	13.7	4.4	121	100	V	33.3	46.0	12.7
444.2	18.4	13.9	4.5	140	100	V	36.8	46.0	9.2
471.1	19.0	14.3	4.7	142	100	V	38.0	46.0	8.0

### MEASUREMENT OF DISTURBANCE RADIATION

